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(57) Abstract :

In this present invention, a novel compact microstrip line feed 4-port MIMO (multiple input multiple output) antenna with a specified size of 58 x 58 x 1.6 mm³ for 5G sub-6GHz N77/N78 bands is disclosed. The disclosed antenna is constructed on a FR4 substrate with relative permittivity=4.4, height=1.6, and loss tangent=0.02. The disclosed MIMO design consists of four circular slotted octagonal shaped radiators (antenna elements) on top and defected ground with ground patches on the substrate's bottom layer. Every octagonal radiator has a circular slot to improve impedance matching. The ground plane consists of a rectangle ground patch with an additional octagonal ground patch under each radiator. The ground plane consists of a partial ground that is rectangular in shape and a ground patch that is positioned beneath each radiator. The MIMO antenna radiators' orthogonal structure and the defected substrate have improved the isolation between the nearby radiators. The developed antenna covers the 5G sub-6GHz N77/N78 band and has a resonance frequency of 3.5GHz from 3.1-42GHz with isolation greater than 15dB.

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